

### **CONDITIONAL PETITION FOR EXTENSION OF TIME**

If entry and consideration of the amendments above requires an extension of time, Applicants respectfully request that this be considered a petition therefor. The Commissioner is authorized to charge any fee(s) due in this connection to Deposit Account No. 14-1263.

### **ADDITIONAL FEE**

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

## REMARKS/ARGUMENTS

Applicants respectfully request reconsideration and allowance of this application in view of the amendments above and the following comments.

New claims 12 and 13 have been added. Both claims are supported by paragraphs [0015]-[0018] of the published application, US 2007/0219293. Applicants do not believe that either of claims 12 and 13 introduces new matter. An early notice to that effect is earnestly solicited.

The sole issue for consideration is the rejection of claims 1-11 under 35 USC § 103(a) as being obvious over Agostini et al. (“Agostini”), US 2003/0069332, in view of Alexandre et al. (“Alexandre”), US 6,465,543. In response, Applicants respectfully submit that the combination of Agostini and Alexandre does not make out a *prima facie* case of the obviousness of any of the rejected claims. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw this rejection.

According to *Manual of Patent Examining Procedure* (“MPEP”) § 2143:

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest ***all*** the claim

limitations.”

Applicants respectfully submit that the Examiner has not met these criteria and, therefore, has not made out a *prima facie* case of obviousness.

#### Claims 1-3 and 6-11

Applicants respectfully submit that a person having ordinary skill in the art would not have been led to combine the teachings of Agostini and Alexandre and certainly not in any manner that would have led such person to the present invention. Therefore, again, Applicants respectfully submit that the combination of Agostini and Alexandre does not make out a *prima facie* case of the obviousness of the rejected claims.

A key point of Agostini’s work is the use of an “elastomer host.” This elastomer host is selected from a diene-based elastomer having the general formula:

Elastomer-X-(OR)<sub>n</sub> [0020].

This host acts as a coupling agent in Agostini’s work and is necessary to bind the precursor. In one of the typical examples (1), this coupling agent is generated by:

- 1) anionic polymerization of styrene (or a diene); and
- 2) subsequent addition of an organosilane.

Hereafter the precursor, ***water***, and a phase transfer agent is added to form the nanocomposite.

This approach is not of general applicability and, indeed, is only applicable to polymers formed by anionic polymerization (e.g., styrene, dienes). Acrylates, such as MMA or acrylic acid, will not be compatible with lithium initiators. Acrylic acid will passivate the lithium initiator and polymerization will not occur. Thus, a person having ordinary skill in the art would not have found it obvious to carry out the in situ formation in any thermoplastic. A way around this problem would be to add significant amounts of Elastomer-X-(OR)<sub>n</sub> to a thermoplastic, but this would significantly alter the resulting polymer properties.

Important for considering the operability of the hypothetical combination of Agostini and Alexandre is that in Agostini's work, ***water*** has to be added after the filler precursor. This allows for a limited control of condensation and particle formation.

The work by Alexandre is a completely different approach. Here, a fine particle powder is the starting point. A polymerization is carried out in the presence of the particles. Control over particle size and aggregation is not possible with this method. Here, one is clearly limited by the question whether the particles form dispersions in a proper solvent or monomer or not. Several examples for this type of polymerization in the presence of dry particle fillers are known, especially for clay type of materials.

Applicants respectfully submit that, especially where polyolefins are used, carrying out Alexandre's process by in situ generation concurrently with Agostini's process would not have been obvious at all! Thus, Alexandre's process makes use of Ziegler-Natta catalysts and MAO, both of which are ***susceptible to water***. Generation of silica by Agostini's hydrolysis and

subsequent application of the polymerization approach of Alexandre would, therefore, have been expected to fail, because the water containing precursor solution necessary for Agostini's process would have been expected to quench the Ziegler catalyst and the activator (MAO) used in Alexandre's process, thereby rendering the Examiner's hypothetical combined process inoperable. Thus, Applicants respectfully submit that a person having ordinary skill in the art would not, in fact, have been motivated to combine Agostini's and Alexandre's approaches. *See, for example, MPEP* § 2143.01 (V): "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."

#### Claims 4, 5 and New claims 12 and 13

These claims require that the mixture of the reactive precursor of the filler and the precursor of the plastic be formed as an ***emulsion*** (claims 4 and 5) or as ***a microemulsion or miniemulsion*** (new claims 12 and 13). The Examiner has not dealt with the limitations of claims 4 and 5 and, therefore, cannot possibly have made out a *prima facie* case as to the obviousness of these two claims.

Indeed, the use of the solvent in Agostini's work shows that Agostini's process is essentially a ***sol-gel process*** carried out in the presence of the polymer with intimate mixing, which is a different approach altogether from the process required by claims 4, 5, 12 and 13. In

the approach of these claims, the particles are generated in the monomer emulsion and after particle generation, the polymerization is carried out without mixing.

In view of the foregoing, Applicants respectfully submit that this rejection is not well-founded. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw this rejection. An early notice that this rejection has been reconsidered and withdrawn is earnestly solicited.

Applicants believe that the foregoing constitutes a bona fide response to all outstanding objections and rejections.

Applicants also believe that this application is in condition for immediate allowance. However, should any issue(s) of a minor nature remain, the Examiner is respectfully requested to telephone the undersigned at telephone number (212) 808-0700 so that the issue(s) might be promptly resolved.

Early and favorable action is earnestly solicited.

Respectfully submitted,

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